CLAIMS:

1. In a digital communication device, an improvement of an approximator for forming an approximation of a Euclidean norm of a data symbol defined in terms of a first component portion and at least a second component portion, said approximator comprising:

a detector adapted to receive indications of the first and at least second component portions of the data symbol;

a transformer coupled to said detector, said transformer for transforming the first component portion into a first transformed value and for transducing the second component portion into a second transformed value, the first and second transformed values, respectively, formed by said transformer selected such that a geometric argument defined therefrom is within a selected angular range; and

an estimator adapted to receive the first and second transformed values, respectively, said estimator for estimating the Euclidean norm of the data symbol, the Euclidean norm estimated to be a summation of a first product value formed from the first transformed value and a second product value formed from the second transformed value.

2. The approximator of claim 1 wherein the selected angular range is comprised of a first angular subrange and a second angular subrange and wherein the first product value and the second product value used by said estimator are further dependent upon in which of the first angular subrange and the second angular subrange that the geometric argument defined by the first and second transformed values is positioned.

3. The approximator of claim 2 wherein the first angular subrange extends between a zero radian and a selected angular radian value, wherein the second angular subrange extends between the selected angular radian value and a pi/4 radian value, and wherein the first and second product values, respectively, are further formed from the selected angular radian value.

4. The approximator of claim 1 wherein the first product value used by said estimator is formed of a first multiplicand multiplied together with the first transformed value and wherein the second product value used by said estimator is formed of a second multiplicand multiplied together with the second transformed value.

5. The approximator of claim 1 wherein the selected angular range is comprised of a first angular subrange and a second angular subrange, wherein the first multiplicand is determined in a first selected manner when the geometric argument defined by the first and second transformed values is positioned within the first angular subrange, and wherein the first multiplicand is determined in a second selected manner when the geometric argument defined by the first and second transformed values is positioned within the second angular subrange.

6. The approximator of claim 4 wherein the selected angular range is comprised of a first angular subrange and a second angular subrange, wherein the second multiplicand is determined in a first selected manner when the geometric argument defined by the first and second transformed values is positioned within the first angular subrange, and wherein the second multiplicand is determined in a second selected manner when the geometric argument defined by the first and second transformed values is positioned within the second angular subrange.

7. The approximator of claim 1 wherein the data symbol is comprised of the first component portion and the second component portion, the first and second component portions forming a quadrature signal pair, and wherein said estimator estimates the Euclidean norm of the quadrature signal pair.

8. The approximator of claim 1 wherein transformations performed by said transformer transform the first and second component portions into the first and second transformed values, respectively, such that the geometric argument defined from the first and second transformed values is an angular value between zero and pi/4 radians.

9. The approximator of claim 1 wherein the digital communication device comprises a modem and wherein said translator and said estimator are embodied at the modem.

10. The approximator of claim 9 wherein the modem forms a portion of a communication station operable in a CDMA-based (code-division, multiple-access-based) cellular communication system, and wherein the data symbol of which the first and at least second component portions thereof are detected by said detector, comprise part of a data sequence communicated during operation of the communication system.

11. The approximator of claim 1 wherein the data symbol is defined in terms of the first component portion, the second component portion, and at least a third component portion, wherein said transformer first forms the first and second transformed values, and said estimator first estimates the Euclidean norm responsive to the summation of the first product value and the second product value, said transformer further for using coordinates associated with the Euclidean norm estimated by said estimator together with the third component portion to form a first iterative transformed value, and said estimator further for re-estimating the Euclidean norm responsive to the first iterative transformed value and the third transformed value.

12. The approximator of claim 11 wherein the data symbol forms an N-dimensional symbol having N component portions and wherein said translator and said estimator are iteratively operable successively to perform N-1 transformations and estimations, the Euclidean norm estimated by said estimator at an N-1 iteration of the transformations and estimations performed by said transformer and said estimator forms the approximation of the Euclidean norm of all N component portions of the data symbol.

13. In a method of communicating by a digital communication device, an improvement of a method for forming an approximation of a Euclidean norm of a data symbol defined in terms of a first component portion and at least a second component portion, said method comprising:

detecting indications of the first and at least second component portions of the data symbol;

transforming the first component portion into a first transformed value and the second component portion into a second transformed value, the first and second transformed values, respectively, selected such that a geometric argument defined therefrom is within a selected angular range; and

estimating the Euclidean norm of the data symbol, the Euclidean norm estimated to be a summation of the first product value formed from the first transformed value and a second product value formed from the second transformed value.

14. The method of claim 13 wherein the selected angular range is comprised of a first angular subrange and a second angular subrange and wherein the first product value and the second product value used during said operation of estimating are further dependent upon in which of the first angular subrange and the second angular subrange that the geometric argument defined by the first and second transformed values is positioned.

15. The method of claim 14 wherein the first product value used during said operation of estimating is formed of a first multiplicand multiplied together with the first transformed value and wherein the second product value used during said operation of estimating is formed of a second multiplicand multiplied together with the second transformed value.

16. The method of claim 15 wherein the selected angular range is comprised of a first angular subrange and a second angular subrange, wherein the first multiplicand is determined in a first selected manner when the geometric argument defined by the first and second transformed values is positioned within the first angular subrange, and wherein the first multiplicand is determined in a second selected manner when the geometric argument defined by the first and second transformed values is positioned within the second angular subrange.

17. The method of claim 16 wherein the selected angular range is comprised of a first angular subrange and a second angular subrange, wherein the second multiplicand is determined in a first selected manner when the geometric argument defined by the first and second transformed values is positioned within the first angular subrange, and wherein the second multiplicand is determined in a second selected manner when the geometric argument defined by the first and second transformed values is positioned within the second angular subrange.

18. The method of claim 13 wherein the data symbol is defined in terms of the first component portion, the second component portion, and at least a third component portion, and wherein said operations of transforming and estimating are iteratively performed, coordinates of the Euclidean norm performed during a first iteration of said operation of estimating is used during a second iteration thereof to form a first iterative transformed value and the third component portion to form a third transformed value.

19. The method of claim 18 wherein a second iteration of estimating re-estimates the Euclidean norm responsive to the first iterative transformed value and the third transformed value.

20. The method of claim 19 wherein the data symbol forms an N-dimensional symbol having N component portions and wherein said operations of estimating and translating are iteratively performed N-1 times.